Final Report

St. Scholastica's Interactive Timeline Exhibition

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Roland de Boo
Rutger Cobben
Hugo Peters
Foreword

At the end of our bachelor Computer Science, each student has to carry out a bachelor project. For us, this seemed like a good opportunity to go abroad. We especially got attracted to Asia because of the different culture and beautiful countries. After we had contacted some people we were invited by Mr. Pijano to come to St. Scholastica's College in Manila, Philippines. We packed our backs and stayed there for 12 weeks in the period April 11th – July 1st. In that time, we built a timeline exhibit for the school’s celebration of their 100 years of existence next year. Also, we did a lot of traveling and met a lot of people. This place has really opened our minds and teaches us in understanding that different cultures have different approaches for the same problem.

This document gives an overview of the things we did here. It also marks the end of our stay. We would like to thank all of the staff at St. School and in the Netherlands for making this possible. We really had a great time here.
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1 Introduction

In this chapter St. Scholastica’s College will be introduced. After that the project will be defined. Finally, an overview of the content of this report is given.

1.1 St. Scholastica’s College

St. Scholastica’s College is a Catholic institution located in Malate, Manila, Philippines. Since its foundation in 1906, St. Scholastica’s College has been managed by the Missionary Benedictine Sisters of Tutzing. Starting with the elementary grades, it admitted high school students in 1907 and opened its collegiate department in 1920. It pioneered formal music education in the Philippines, opening a Conservatory of Music in 1907 which, to the present, has turned out most of the leading women musicians of the country. Within its 3.6 hectare campus is an enrollment of 6,149 elementary, secondary college and graduate students.

1.2 Project

Currently, the information on the history of the Benedictine Sisters and St. Scholastica’s College is scattered around in various PowerPoint presentations, websites, and off course books and other analog media. For the Museum Archives, a more structured exhibition is aimed for, allowing visitors to browse the history of the Philippines, the Benedictine sisters and St. Scholastica’s College in the past 100 years. This interactive exhibit will be the center piece of the Museum Archives of the Missionary Benedictine Sisters in the Philippines. We are to design such a system, and start to implement it. Also, we should ensure continuity of the project by making the staff familiar with the system. This way they can take it along after we are gone, maintaining it as its database grows.

1.3 This document

This document will describe our project trajectory. In chapter two, we will describe how the project was organized.

- In the second chapter we will describe the logistics of our project – planning, working days, meetings and documentation.
- In the third chapter we will give an overview of our Analysis phase, the things we did during it and the results from it.
- In the fourth chapter we will describe our Design phase and the design that emerged from it.
- In the fifth chapter we will tell about the implementation of our system.
- In the sixth chapter we evaluate the system with respect to the requirements we formed during our analysis and design.
- In the seventh chapter we reflect on the project from a personal view – working experiences, travels, cultural differences.
- The eighth chapter lists the documents we created.
- Finally, the ninth chapter concludes with references.
2 Project Organization

In this chapter we will describe all things related to the continuation of our project, such as our planning and logistics.

2.1 Planning

In the first week we made a planning for the rest of the project. Although we didn’t have a lot of insight into the project yet, we decided to stick with the phased project planning we got used to during our earlier projects at the TU Delft. The dates we used were fairly preliminary as it is always difficult to tell in advance how much time you need for certain parts of the project. However, in the end, we found our pace was in line with the original deadlines.

2.2 Working days

We worked on weekdays from 9 am to 5 pm in the period April 12th – July 1st (12 weeks). We would normally lunch somewhere between 12 and 2 for about 45 minutes.

2.3 Meetings

Meetings during the project were informal and irregularly scheduled. Most were ad hoc: when something needed to be discussed we would just walk into the office and try to find the person we needed. If that didn’t succeed, we would schedule a meeting later. This worked out fine in practice.

2.4 Documentation

Documents have been created for each of the first three phases in our planning (planning, analysis, design). In addition, this report marks the end of the project.

Besides the code we also deliver a User Manual, a Technical Report describing the system and its working, and specifications of the subparts of the system. Should something not be immediately obvious, it can always be looked up.
3 Analysis

Duration: 2 weeks.

We started out by defining the problem. It was stated in our Analysis Report as "How to visualize information about of the Philippines, the Benedictine sisters and St. Scholastica's College during a period of time from 1900 till now based on a timeline in a structured and interactive way?"

Having a clear problem definition gives something to work to.

3.1 Investigating the situation

We must also keep in mind our other objective as stated in the planning report: ensuring continuity of the project. Therefore, we investigated the knowledge available with the local staff concerning this topic, and looked at previous attempts to visualize the school’s history. The latter consisted of a book about the school, a website about the Benedictine Sisters and various PowerPoint presentations. The problem is that the information is not really structured, which is what this project is all about. We tried to imagine what kind of data the system was to contain and how much of it.

We found out the staff is knowledgeable about SQL and some scripting languages, among them ASP. In choosing our programming language of choice, we kept this in mind.

3.2 Collecting requirements and constraints

During meetings we found out about some other constraints. We narrowed down the system actors and what they should be able to do, and what not. This knowledge was turned into system requirements. Also we brought up some standard project issues, such as hardware, scalability, performance and tried to find out which requirements the system was to meet. Project constraints such as project time, costs and project continuity were written down so they could be referred to in the future.

3.3 Looking for examples

We didn’t want to reinvent the wheel, or worse, come up with a wheel that is not up to par. So after this, we turned to the internet to look for other timelines. These were carefully evaluated for their merits and drawbacks. We noted our findings and the addresses for using them in our Design phase.

3.4 Looking for appropriate techniques

The constraint for our system to be web based narrowed down our pool of useable techniques. We specifically looked deeper into the PHP versus ASP debate and noted that in the end, differences are small so it more or less comes down to personal preference.
4 Design

Duration: 3 weeks.

The first phase was all about narrowing down our problem and exploring the boundaries within we are to work. Now that is clear what the system should be able to do at what costs, we started to think about what it could look like.

4.1 Dividing the system

After analyzing the tasks the system should fulfill, it soon became clear that there are two distinctive systems: the data part, and the visitor part. Clearly separating these two parts has some advantages: They can be developed apart, and can function apart (although the visitor part needs some gateway to the database, but that is fairly simple). Should the need arise, parts of the system, for example the visitor part, can be replaced without compromising the rest of the system. This is in line with the thought of continuity. It also means we could develop both parts simultaneously.

4.2 Data Framework

Following common design practices, we soon came up with the SQL tables that would suit our needs. Next we designed a framework of PHP classes that would be able to connect to the database, and methods for altering the tables. Internally, we used OOP-style programming so communication between classes is easy and clear. In effect, our database class is an interface that provides information retrieval and modification with only a simple function call. On top of this interface, any web site can be placed.
Besides this framework we designed the website for entering data (i.e. the historical events) into the database. We specified the web pages for all functions, like entering or editing a document, uploading and attaching media files, user accounting, search pages, etc.

4.3 Visitor Interface

This is the website that is it’s all about in the end. Visitors will be able to browse through the data by means of a clear, user-friendly, attractive website presentation. It will have the form of a timeline where events can be easily spotted between other events in the same era. There are a lot of ways to visualize the data; all having their pros and cons in terms of attract ability and usability. Also, some problems may occur when there are a lot of events in the same period. In particular a bunch of events in the same year may be difficult to show clearly. We already considered some concepts in our analyze phase. We built some hybrid prototypes and presented them. Two especially stand out: a 3D Timeline of the History of Medicine [1] and a timeline for the New Zealand Treaty of Waitangi [2]. We decided to combine them both; with the 3D version being the eye-catching introduction to the more elaborate 2D timeline.
A problem was that all the sites we found were static websites, which means some person has been moving the events about on the timeline until everything fits well. With a dynamic site like ours, we cannot do this. Therefore there should be some algorithm that makes sure the events are placed on the timeline in the right way.
5 Implementation

Duration: 4 weeks implementation. 2 weeks testing and deploying.

We split up tasks, giving each person his own project. The data framework was built by Roland, the 2D timeline by Hugo and the 3D timeline by Rutger. Of course, this was not a strict division, and we helped out each other where we could. Still, this way everyone became an expert at a part of the system, speeding up development. When difficulties were encountered, we made it a point to discuss it, rather than solving it on our own. We found that making decisions with our group led to a more thought-out, probably better solution.

As we had a clear database design, the tables could be created right away. We then quickly built a gateway for the Flash presentations, so they could access the database for some real data.

Although the Design Report is supposedly final, the design posed in it rarely holds for the full 100 percent. Small modifications were made to the SQL tables design, easing the amount of tables that need to be joined together for some queries. The information about the creation and editing of documents is now in the documents table itself, rather than being a separate table.
6 Results, recommendations and conclusions

In this section, we will evaluate the system with respect to the initial requirements as described in our analysis report. From this, we will draw a final conclusion. As virtually all computer systems, the timeline system has room for improvement. We therefore also give some suggestions for extending the system.

6.1 Results

In our Analysis Report, a comprehensive list of requirements was formalized. We will review them briefly here in the light of our system, and state to what extend they have been met. This evaluation serves to see how successful our project was.

6.1.1 Functional requirements

The visitor should be able to:

- Get information about:
  - 3 Themes (Country, Sisters, St Scholastica’s)
  - Interaction between the timelines
  - Events during the years (1900- till now)

- Search information by means of:
  - Text
  - Time constraints

These requirements have all been met.

The data-input account should be able to:

- Add, edit and remove documents
- Add, edit and remove media files
- User authorization for this account

These requirements have all been met.

The admin should be able to:

- Add, edit and remove users
- User authorization for this account
- Gathering system information (Statistics of the system)

The first two requirements have been met. The last has not yet been implemented as it had low priority and we decided to focus on other tasks first.

6.1.2 Non-functional requirements

- User interface: the system is web based. It can be used by mouse, though touch screens might require some minor modifications (i.e. bigger buttons, because fingers are less precise). Because the use of touch screens was quite uncertain during our project, we decided to design for mouse use.
- Documentation: the system is thoroughly documented, both in terms of external documentation and inside code comments.
• Security: currently authorization only checks for valid user credentials, so the data input system can be accessed from any internet browser. When deemed necessary, an ip-checking routine can be built in just a few lines.

• Hardware: the system runs fine on the available hardware.

• Scalability: the system is modular and can be easily extended. There is no theoretical limit on the amount of data in it, though at a certain point, the introduction of more levels may be wanted. This can be done without much hassle. At the status quo, the system is able to hold thousands of documents, probably enough for years.

• Performance: we didn’t encounter any performance problems. The system seems efficient enough.

• Location: the location of the system is not of any importance, nor is the location of the user, provided an internet/intranet connection exists between the two.

### 6.1.3 Constraints

• Continuity: the local staff is familiar with the system and we are confident that they will be able to keep it up and running. Also, the data input system has been made as user-friendly as possible, so few will encounter problems when entering data. Sufficient code comments have been written to make any part of the code clear to those wishing to alter it. The provided documents should assist in both using and extending the system.

• Costs: we didn’t make any costs.

### 6.2 Suggestions

A system like this is never really finished. Here are some brief suggestions on areas we feel could be tweaked or improved.

• A button for users to view their own documents, so they can have instant access to them. This can be implemented by simply getting the user id from the Session, then passing this to a (to be implemented) function in the DB class for retrieving the right documents.

• In the 3D timeline, the picture chosen per year is currently random taken. A loop runs through the events per year per theme and tries to find an image, and if it does, it uses it. Otherwise, a question mark appears, signaling that a picture should be uploaded or attached. We can imagine that more direct control over which picture will be shown is needed. The solution to this is fairly simple. Because of the nature of media files in our system (the fact that they can be reused, meaning they can be attached to multiple documents) you cannot store the information within the media table. Just add a new table like “3d_timeline_pictures” with two columns. Use year+theme as a key, and store a mediaid next to it. Write a new method in the DB class to retrieve the media id if you give year and theme as an argument. A new admin page will be needed for choosing the picture per year and per theme. Finally, alter the flash_timeline interface to return the right image for each 3d event.
6.3 Conclusion

The delivered system is fully functional. We are happy to say that with the exception of a few minor details, all of the initial requirements have been met. Now comes the time for the local staff to start entering the history of St. Scholastica’s College, the Benedictine Sister and the history Philippines into the database. It will take some months before the exhibition will be exposed to the real visitors of the museum archives of the Benedictine Sisters. In the meantime, it will be further tailored to fit into the museum style. Hopefully, within the College, it will be a small historical milestone of its own, offering visitors a digital view of the museum’s archives.
7 Personal reflection

7.1 Professional

Most people in the Philippines heardfully welcomed us, starting with our first day here. We were introduced to a lot of people and got a tour around the campus. We met most of the other people in the computer department right away and had a great deal of fun with some of them.

Concerning our project, there were only a few people involved. We tried to show them our progress regularly so they would know what was going on. There are some differences in the way people handle projects, however. Our phased-project planning is less common here, so we felt people would be more interested in a superficial graphical prototype than in reports with thorough analysis but few pictures.

As we moved to the end of our project, we sometimes felt we had to discuss more with Mr. Pijano, but unfortunately he has been away for some weeks and was too busy at other times. In the future we will try to make more strict appointments regularly. On the other hand, we were provided with everything we needed so we could work along fine.

7.2 Personal

We had a room next to the campus so there was no need of traveling in the morning. After work we explored the huge city. At first everything looked new and strange but once we got to know our way around the city we had a lot of fun.

In the weekends we always tried to get out of the city, both to explore the Philippines and just to get some fresh air. We have been at a lot of beautiful and fun places, including Puerto Galera, Boracay, Cebu City, Bohol, Tagaytay, Taal Volcano, Catalagan, Zambales, Subic Bay and the Pagsanjan falls.

While surfing, snorkeling, horse riding, sitting on the roof of a jeepney, being in a boat, swimming under a waterfall or just lying on the beach we’ve met a lot of people and we’ve been hanging around with them, talking and drinking. Often they would invite us at home so we could meet their culture, taste their food and hear their views on the world. And vice versa off course, though we didn’t bring any Dutch food. All in all it has been a great experience that gave a lot of insight into a culture a lot different from ours, and above all, a lot of fun.
8 Documentation

Several documents were written during this project. They are listed below with a brief description.

8.1 Planning
Our first report containing our objectives, tasks to start out with and a planning for the rest of the 12 weeks.

8.2 Analysis Report
An analysis of the status quo, the environment the system is to operate in, requirements for the system, and some existing concepts.

8.3 Design Report
Complete design of the system, including diagrams, and system tasks.

8.4 Technical Report
Describes the system including specification of all files and the database design. Serves as a reference for those wishing to alter the system.

8.5 User manual
Introduction to the content management system for those new to it.
9 References

[1] 3D timeline: History of Medicine
URL: http://www.schoolscience.co.uk/content/4/biology/abpi/history/timeline.html